neither cytolytic nor toxic activity, nor did it contain any trace of oxalic acid or oxalates to which the toxic action of *Botrytis* extract has sometimes been attributed. The enzyme acts only in acid media. In neutral solution its activity is greatly retarded, and in slightly alkaline media the activity is inhibited. Here again the toxic properties of the extract are affected in the same manner as the cytolytic properties. The extract may be reactivated by the addition of acid to the neutralized or alkaline medium. From the impossibility of separating, by any of the means described above, the toxic and the cytolytic properties of the extract, the author is inclined to believe that both are due to the same substance or group of substances.

The most striking difference in the physiological behavior of these two fungi is seen in the extent of their cytolytic action. By reason of its greater virulence in this respect, *Botrytis cinerea* is adapted to live as a saprophyte on dead plant tissues poor in soluble carbohydrates, while *Monilia*, possessing the power of hydrolyzing cellulose only to a slight extent, is restricted in its existence to ripening fruits and other tissues rich in soluble sugars. Correlated with this difference in the mode of life of the two fungi is the method of production of sclerotia. The tissues invaded by *Botrytis* are completely destroyed, consequently the sclerotia are formed as well defined free bodies outside of the invaded substance, while in *Monilia* the sclerotia are formed within the mummified tissues of the host, which are sometimes involved in the process.—H. HASSELBRING.

Notes on gymnosperms.—THOMAS[5] has discovered the staminate strobilus of *Williamsonia gigas* from the Jurassic of Yorkshire. The strobilus consists of 18–20 microsporophylls united into a cuplike structure. THOMAS is inclined to believe that these sporophylls were not associated with the ovule-bearing region, but that they represent an independent staminate strobilus.

SAHNI[11] has discovered in the pollen chamber of some young ovules of *Ginkgo* certain winged pollen grains which are very different from those of *Ginkgo*. About a dozen such ovules were examined, and 8 contained these foreign pollen grains, characterized by prominent wings. Furthermore, not only did these ovules contain foreign pollen from as many as three distinct species, but one of the pollen grains was in an advanced stage of germination. The interesting suggestion is made that if a similar example were found in a fossil, "it would in all probability lead to a reference of the pollen grains and ovules to the same species." Since this has been done already, the caution is well taken.

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[5] THOMAS, H. HAMSHAW, On some new and rare Jurassic plants from Yorkshire: the male flower of *Williamsonia gigas* (Lind. and Hutt.). Proc. Cambridge Phil. Soc. **18**:105–110. *pl. 6. figs. 2.* 1915.

[6] SAHNI, BIRBAL, Foreign pollen in the ovules of *Ginkgo* and of fossil plants. New Phytol. **14**:149–151. *pl. 2.* 1915.

PEARSON[7] has been studying the morphology of *Gnetum*, and has recorded some interesting observations. He finds four types of strobili in *G. Gnemon*, which constitute a sequence from the strictly monosporangiate to the bisporangiate condition. He also finds that the endosperm develops in many details as that of *Welwitschia*, especially in the multinucleate character of the primitive tissue. The nuclei in each "compartment" in the chalazal region fuse; while in the micropylar region there is no septation. It seems, therefore, that the primary endosperm of the two genera is alike in all respects. PEARSON sees in this endosperm a new structure which is neither sporophyte nor gametophyte, but which he designates as "trophophyte," and it is further suggested that the endosperm of angiosperms is a highly specialized form of this trophophyte. The interesting suggestion is made that the fusing polar nuclei of angiosperms may be morphologically the representatives of the fusing nuclei of *Welwitschia* and *Gnetum*.

BOODLE[8] has discovered concrescent leaves on a tree of *Pinus Laricio* growing in the Royal Botanical Gardens, Kew. These leaves are produced every year in considerable numbers. It is suggested that the double needles of *Sciadopitys* may be morphologically similar to those of *P. Laricio*, that is, they may represent two foliage leaves fused by their margins. The orientation of the leaves of the double needles of the Austrian pine, however, is not constant, cases being found with fusion by the adaxial margins, by the abaxial margins, and by obliquely placed leaves.—J. M. C.

Endemic flora of Ceylon.—In connection with the revision of his catalogue of the Ceylon flora, WILLIS[9] has reached some interesting conclusions in reference to geographical distribution and evolution. The conclusions are derived from the use of statistical methods and the classification of the Ceylon species into a series of six groups, graded from "very rare" to "very common." He observes that the rarest plants are local endemics, and the commonest are those of widest distribution. The conclusion is that "local endemic species have not been developed in any kind of advantageous response to local conditions." That the endemic genera should show greater rarity than do the endemic species as a whole cannot be explained by any such theory of adaptation. Graphically WILLIS' observations would "run in the exact reverse direction all through to that demanded by the theory of natural selection." A second conclusion is that on the average the commonness of the species depends upon its age locally, species developing "quite indifferently to local conditions, though possibly because of those conditions."

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[7] PEARSON, H. H. W., Notes on the morphology of certain structures concerned in reproduction in the genus *Gnetum*. Jour. Linn. Soc. **43**:55–56. 1915.

[8] BOODLE, L. A., Concrescent and solitary foliage leaves in *Pinus*. New Phytol. **14**:19–22. *figs.* 4. 1915.

[9] WILLIS, J. C., The endemic flora of Ceylon, with reference to geographical distribution and evolution in general. Phil. Trans. Roy. Soc. London B **206**:307–342. 1915.